

What is claimed:

1. A wireless access node comprising:
5 a first radio operable to transmit/receive on one of at least N transmission channels;
a second radio operable to transmit/receive on another one of the at least N
transmission channels;
a first filter bank of less than N filters for filtering a first transmit/receive signal of the
first radio; and
10 a second filter bank of less than N filters for filtering a second transmit/receive signal
of the second radio;
wherein N is greater than 2.
2. The wireless access node of claim 1, wherein the first filter bank and the second filter
15 bank are substantially electro-magnetically isolated.
3. The wireless access node of claim 1, wherein the combination of the first radio and the
second radio are operable to transmit/receive on all N transmission channels.
- 20 4. The wireless access node of claim 1, wherein the access node is in communication with
a first device and a second device, the first radio being in communication with the first
device, and the second radio being in communication with the second device.
5. The wireless access node of claim 4, wherein the communication of the access node to
25 the first device and the second device is reversible so that the first radio is in communication
with the second device and the second radio is in communication with the first device.
6. The wireless access node of claim 5, wherein the access node is within a mesh network,
and the first radio is in communication with at least one of the first device and the second
30 device depending upon a selected mesh network routing.

7. The wireless access node of claim 6, wherein the access node is within a mesh network, and the second radio is in communication with at least one of the first device and the second device depending upon a selected mesh network routing.
- 5 8. The wireless access node of claim 1, where $N=3$, and the first filter bank comprises 2 filters, and the second filter bank comprises 2 filters.
9. The wireless access node of claim 8, wherein at least one of the filters of the first filter bank filters signals of a different transmission channel than at least one of the filters of the
10 second filter bank.
10. The wireless access node of claim 8, wherein each filter of the first filter bank has a corresponding complementary filter within the second filter bank.
- 15 11. The wireless access node of claim 10, wherein a first filter is complementary to a second filter if the first filter rejects frequencies of a desired pass band of the second filter, and the second filter rejects frequencies of a desired pass band of the first filter.
12. A wireless access node comprising: /
20 a first radio operable to transmit/receive on one of at least N transmission channels;
a second radio operable to transmit/receive on another one of the at least N transmission channels, wherein N is greater than 2; and
wherein the access node is in communication with a first device and a second device, the first radio being in communication with the first device, and the second radio being in
25 communication with the second device; and
wherein the communication of the access node to the first device and the second device is reversible so that the first radio is in communication with the second device and the second radio is in communication with the first device.

13. The wireless access node of claim 12, wherein the access node is within a mesh network, and the first radio is in communication with at least one of the first device and the second device depending upon a selected mesh network routing.

5 14. A wireless mesh network comprising:
a plurality of wireless access nodes, each wireless access nodes in communication with at least one other wireless access node, each wireless access node comprising;
a first radio operable to transmit/receive on one of at least N transmission channels;
10 a second radio operable to transmit/receive on another one of the at least N transmission channels;
a first filter bank of less than N filters for filtering a first transmit/receive signal of the first radio; and
a second filter bank of less than N filters for filtering a second transmit/receive
15 signal of the second radio.

15. The wireless mesh network of claim 14, wherein the mesh network comprises a gateway, and the access nodes allow a client communicate with at least one access node, providing communication between the client and the gateway.

20 16. The wireless mesh network of claim 14, wherein the first radio is operable to communicate with a first device and a second device within the mesh network, and the second radio is operable to communicate with the first device and the second device within the mesh network.

25 17. The wireless mesh network of claim 14, wherein depending upon a selected routing within the mesh network, the first radio is in communication with at least one of the first device and the second device, and the second radio is in communication with the other of the first device and the second device.

18. The wireless mesh network of claim 17, wherein the selected routing is dynamic.

19. The wireless mesh network of claim 14, wherein downstream data flows from the gateway to the client, and upstream data flows from the client to the gateway.

20. The wireless mesh network of claim 19 wherein the second radio and the first radio of each access node can be rotated between downstream data transmission and upstream data transmission.

21. The wireless access node of claim 14, wherein each filter of the first filter bank has a corresponding complementary filter within the second filter bank.

22. The wireless access node of claim 21, wherein a first filter is complementary to a second filter if the first filter rejects frequencies of a desired pass band of the second filter, and the second filter rejects frequencies of a desired pass band of the first filter.

23. A method of routing information through at least one access node of a mesh network, comprising:

selecting a routing path between a client and a gateway;

selecting a transmission channel for each hop of the selected routing path;

selecting an upstream versus downstream orientation of at least one access node within the selected routing path, wherein the orientation of at least one access node is able to rotate.

24. The method of claim 23, further comprising:

selecting channel filtering within the at least one access node within the selected routing path.

25. The method of claim 23, wherein selecting a routing path comprises determining the routing path that provide a maximal throughput.

26. The method of claim 23, wherein selecting a transmission channel for each hop of the selected routing path comprises selecting each transmission channel for minimizing interference.

5 27. The method of claim 19, wherein the orientation is selected based upon filters available to the radios within the access node.

28. The method of claim 20, wherein selecting channel filtering within the at least one access node within the selected routing path comprises selecting a first filter within a first radio of at
10 least one access node that is complementary with a second filter within a second radio of the access node.

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